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Tracking Patients Through Washington's Trauma System Is Critical to Improving Care and Saving Lives

It's 5:17 pm and Interstate 5 has come to a standstill behind the flashing lights of a Medic I unit. A motor vehicle crash has caused life-threatening injury to a passenger in one of the vehicles. Emergency medical service (EMS) technicians assess the injuries, begin life support procedures, and place a numbered identification band on the person's wrist. The trauma patient's potential for survival then depends on quick transport to a facility that can give appropriate care. Why race a patient with intracranial hemorrhage to a hospital that lacks a neurosurgeon? Or a child with flail chest to an emergency department without pediatric resuscitation equipment?

Washington's statewide trauma care system, established in 1990, addresses this issue of rapid transport to an appropriate facility. Seventy-four hospitals and three clinics in Washington are now designated as trauma service providers. They range from Level I Harborview Medical Center in Seattle to the Level V designation of small rural clinics or hospitals such as Ferry County Memorial Hospital in Republic. Medic I units, ambulance services, or other first responders assess the patient's condition and transport directly, or call for an air transport service to fly the patient to the nearest trauma facility that can best treat the patient's injuries.

A critical component of Washington's trauma system is the statewide trauma registry, which collects and analyzes data used to assess and improve the system. Just over a decade ago, the National Research Council's report, *Injury in America*, decried the lack of trauma data as so severe as to preclude the evaluation of effective care. Shortly thereafter, the American College of Surgeons initiated the Major Trauma Outcome Study (MTOS), which gathered physiologic and anatomic measures of injury severity from more than 200,000 trauma patients treated between 1982 and 1987. Analysis of these data led to the development of the Trauma Injury Severity Score (TRISS), a method to predict a patient's probability of survival and to evaluate trauma care outcomes.

Each of the 77 trauma service providers in Washington is required to submit data to the state trauma registry. These data do not include all injuries but only major trauma that is likely to require surgical intervention. From these

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Every week, 52 Washington residents die from injury:*

- 15 die in motor vehicle crashes
- 12 die by suicide
- 12 die from poisoning, a pedestrian incident, a bicycle crash, or other injury
- 5 die from a fall
- 4 die from homicide
- 3 die from drowning
- 1 dies from fire or scalding

*Mean numbers based on 1990 data; includes prehospital cases.
Source: Washington State Center for Health Statistics

Influenza Alert

Surveillance for influenza is conducted through a sentinel network of primary care providers and laboratories, and from reports of school absenteeism. As of December 10, a total of 82 confirmed cases of influenza A and six of influenza B had been reported in the state. Eighty-two percent (75) of the reported cases reside in King County. Nationally, 33 states have reported confirmed influenza. All identified influenza strains from Washington were included in this year's vaccine. Immunization is advised for persons at high risk such as the elderly, persons with chronic medical conditions, and health care workers (see October epiTRENDS). Anyone not yet immunized should be vaccinated as soon as possible.

Injury is the last major plague of the young. Trauma . . . kills more people age one to 34 than all other diseases combined, is the number one cause of death to age 44, and the most costly of all health problems.

Injury in America: A Continuing Public Health Problem. National Academy Press, 1985.

Trauma (from page 1)

registries the Department of Health (DOH) receives quarterly reports of patient demographic, etiologic, anatomic, physiologic, treatment, and outcome data. In 1995 DOH received information for more than 8,000 trauma patients.

In addition, EMS providers submit scene and transport data on trauma patients to DOH. Measures such as response time, vital signs, biomechanics of injury, and time at the accident scene are included in this data set. Each patient's numbered identification band is recorded by all EMS agencies and hospitals involved in transport or care of the patient. Once these records are submitted to DOH, the trauma band number is used to link patient records from prehospital provider through rehabilitation care. Ultimately this linkage permits assessment of how first responder and hospital care affect patient outcomes. The registry can identify system and clinical provider problems. For example, analysis of data may show that prehospital providers in an area consistently delay in giving an estimated time of arrival to the emergency department, which loses valuable time to prepare the trauma team for the patient's arrival.

Washington was among the first states to organize a comprehensive statewide trauma care system and registry. It is the first state to address the issue through the entire continuum of care from injury prevention to first responder care, through acute hospital care and rehabilitation. Washington's trauma system and registry are attracting increasing national attention for their scope, broad participation, and unusual design of linking EMS data with hospital records.

Only three decades ago trauma was described as the "neglected disease of modern society." Our statewide system, created and implemented by trauma care providers, has moved this problem from a category of neglect to a high-focus public health initiative that is saving lives.

To obtain a statewide list of designated trauma facilities or additional information on the trauma registry and how to access data, call the DOH Office of EMS and Trauma Systems at 1-800-458-5281. ◆

TABLE: Outcomes of hospitalized trauma patients by mechanism of injury, Washington State, 1995 (preliminary data)

Mechanism of Injury	Total Number	Deaths	Mortality Rate
Fall	2,037	91	4.5
Motor vehicle	1,820	116	6.4
Gunshot	480	79	16.5
Beating/blunt instrument	423	11	2.6
Burn	360	24	6.7
Motorcycle	297	12	4.0
Pedestrian	283	36	12.7
Stabbing	263	11	4.2
Bicycle, including bicycle/car	185	7	3.8
Unknown	777	65	8.4
Miscellaneous*	689	35	5.1

*Approximately 10% of trauma cases; includes drowning, sports/play injury, electrical shock, drug reaction/overdose, alcohol intoxication, child or sexual abuse, and other causes.

E. coli Outbreak Summary: 66 Cases Tied to Apple Juice

The outbreak of E. coli 0157:H7 illness that occurred in Washington and several other Western states in late October and November was rapidly contained with the identification of Odwalla apple juice as the source and the removal of this product from the market. Case reports, as of November 22, totaled 66 juice-associated cases: 28 in Washington, 22 in California, 11 in British Columbia, and 5 in Colorado. Fourteen persons developed hemolytic uremic syndrome, and one 16-month-old child in Colorado died. At least one of the cases was traced to secondary transmission. One production lot of unpasteurized apple juice tested positive for the E. coli organism.

This outbreak was a reminder that E. coli 0157:H7 can be a serious infection, particularly in children. Any food can be at risk of contamination. Attention to hygiene, including careful handwashing after using the toilet or handling a diaper, are essential in avoiding secondary transmission. It is important for health care providers to culture bloody diarrhea for enteric organisms, including E. coli 0157:H7, so as to provide proper treatment and to assist with identification of outbreaks.

Monthly Surveillance Data by County

November 1996* – Washington State Department of Health

County	Campylobacter	Giardia	Hepatitis A	Hepatitis B	E. coli O157:H7	Salmonella	Shigella	Meningococcal Disease	Tuberculosis	AIDS	Gonorrhea	Syphilis	Pesticides†	Lead§#
Adams	0	0	0	0	0	0	0	0	0	0	0	0	1	0/0
Asotin	1	0	8	0	0	0	0	0	0	0	0	0	0	0/0
Benton	1	2	1	0	1	1	1	0	0	0	0	0	1	0/10
Chelan	1	0	0	0	0	1	2	0	0	0	0	0	1	3/#
Clallam	3	1	0	0	1	0	0	0	0	0	0	0	0	0/0
Clark	7	10	7	2	5	9	0	0	0	2	9	1	0	0/0
Columbia	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Cowlitz	0	0	3	0	0	0	0	1	0	0	0	0	0	0/12
Douglas	1	0	1	0	0	1	0	0	0	0	0	0	0	0/0
Ferry	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Franklin	2	4	0	1	0	2	0	0	0	0	2	0	2	0/0
Garfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Grant	0	0	0	0	0	2	0	0	0	0	1	0	0	0/1
Grays Harbor	2	0	1	2	0	1	0	0	0	0	0	0	0	0/5
Island	0	0	1	0	1	0	0	0	0	1	0	0	0	0/1
Jefferson	2	0	0	0	0	0	10	0	0	0	0	0	0	0/0
King	11	10	40	0	11	10	2	1	9	42	65	6	1	5/39
Kitsap	5	3	8	1	1	1	0	0	0	1	15	0	0	0/18
Kittitas	0	0	1	0	0	0	0	0	0	0	1	0	0	0/3
Klickitat	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Lewis	5	1	1	0	0	0	0	0	0	0	0	0	0	0/2
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Mason	0	0	12	2	0	0	0	0	0	0	0	0	0	0/1
Okanogan	0	0	0	0	0	0	0	0	1	0	0	0	0	0/0
Pacific	0	1	0	0	0	3	0	0	1	0	1	0	0	0/0
Pend Oreille	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Pierce	5	6	8	2	3	5	1	1	1	1	24	1	1	2/102
San Juan	1	0	0	0	0	0	0	0	0	0	1	0	0	0/0
Skagit	1	0	7	0	2	1	0	0	0	0	2	0	0	1/7
Skamania	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Snohomish	12	7	1	1	3	6	2	1	0	0	7	2	1	1/22
Spokane	4	0	0	0	0	0	0	0	5	2	13	0	0	2/21
Stevens	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Thurston	3	3	3	0	1	0	0	0	2	1	3	0	0	1/13
Wahkiakum	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Walla Walla	0	1	0	0	0	0	0	0	0	0	0	0	0	0/16
Whatcom	2	0	0	0	19	3	0	0	0	1	0	0	0	0/3
Whitman	0	0	0	0	0	2	0	0	0	0	1	0	0	0/6
Yakima	30	25	7	1	1	7	21	0	1	1	2	1	1	0/18
Unknown														0/0
Current Month	99	74	110	12	49	55	39	4	20	52	147	11	9	15/300
November 1995	75	81	69	18	7	52	28	5	19	56	223	24	18	41/326
1996 to date	925	536	691	97	151	551	254	92	255	622	1905	126	394	183/5011
1995 to date	899	675	802	184	114	548	348	85	249	834	2558	193	401	201/3445

* Data are provisional based on reports received as of November 30, unless otherwise noted.

† Unconfirmed reports of illness associated with pesticide exposure.

§# Number of elevated tests (data include unconfirmed reports) / total tests performed (not number of children tested); number of tests per county indicates county of health care provider, not county of residence for children tested; # means fewer than 5 tests performed, number omitted for confidentiality reasons.

Foodborne Illness Can Spoil Holiday Festivities

Home-cooked foods often appear at holiday buffets and potlucks. Improper food handling at home can cause illness. Symptoms including stomach discomfort, nausea, vomiting, and diarrhea may range from mild and transient to severe and prolonged. Many foodborne illnesses are caused by bacteria commonly found in foods of animal origin such as meat, milk, eggs, fish, or shellfish.

Health care clinicians and educators can advise their patients and the public how to avoid foodborne illness. The following tips explain how to prevent contamination of food and keep naturally occurring bacteria from multiplying by cooking, storing, and serving food at proper temperatures. A basic rule is "keep hot food hot and cold food cold."

Tips to Prevent Foodborne Illness

- Shop for meats (including poultry and seafood) last.
- Keep raw meats separate from other foods (especially produce) in your shopping cart or grocery bags.
- Put foods into the refrigerator as soon as possible.
- Wash your hands after handling raw meat in the store or at home.
- Always wash hands before you begin to prepare food, and after handling raw meat, poultry, or seafood. Use warm water, soap (preferably antibacterial), and paper towels.
- Sanitize cutting boards, knives, or countertops that come into contact with raw meat by using a solution of bleach water (1 Tbs./gal.) or antibacterial cleaner.
- Do not reuse wash cloths after wiping countertops, especially after cleaning up raw meat juice.
- Do not use the same dish before and after you cook meat unless you wash it.
- Cook food thoroughly to safe temperatures; use a thermometer for meat and poultry.
- Do not allow perishable food to sit at room temperature for more than two hours.
- Arrange and serve food on several small platters instead of one large one. Keep the rest of the food either hot in the oven (set at 200–250°) or cold in the refrigerator.
- Keep hot foods hot with warming trays or chafing dishes.
- Colds foods should be kept at 45° or colder. On the table, keep cold foods cold by nesting dishes in bowls of ice.
- Replace empty platters rather than refilling them.
- Serve only commercially produced eggnog, which is made with pasteurized eggs.
- Do not allow leftovers to cool at room temperature. Refrigerate immediately.
- Keep leftovers in shallow containers (food depth less than 2 in.) so they cool quickly.
- Do not cover foods in the refrigerator until they have cooled down.
- Reheat leftovers to 165°.

WWW Access Tips

The World Health Organization (WHO) maintains a page describing recent infectious disease outbreaks. It can be reached at: http://www.who.ch/outbreak/outbreak_home.html

Questions? Comments?
If you have a question about epidemiologic or public health issues, contact the editors at the address on the mailing panel or by email at function@u.washington.edu

Happy Holidays & a Healthy New Year

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